WHAT IS CLAIMED IS:

5   1. A tomographic image reading method for extracting a comparison image corresponding to a diagnostic image and displaying the images, said diagnostic image being a slice image which is one of

10   first tomographic images, said comparison image being a slice image which is one of second tomographic images which are taken at the time different from the time when the first tomographic images are taken, body section being a slice plane

15   in the X-Y axial direction and body axis being in the Z axial direction, said method comprising the steps of:

inputting said first tomographic images and said second tomographic images;

20   generating a first projection image from said first tomographic images and a second projection image from said second tomographic images;

measuring shift amount between said first

25   projection image and said second projection image by searching said second projection image for the same area as a template, said template being generated from said first projection image such that said template includes an area in which a specific object

30   image exists;

correcting the slice position according to said shift amount between said first projection image and said second projection image; and

displaying said diagnostic image and said

35   comparison image at a corrected slice position to a monitor.

2. An image alignment method for
5   extracting a comparison image corresponding to a
diagnostic image and displaying the images, said
diagnostic image being a slice image which is one of
first tomographic images, said comparison image
being a slice image which is one of second
10   tomographic images which are taken at the time
different from the time when the first tomographic
images are taken, body section being a slice plane
in the X-Y axial direction and body axis being in
the Z axial direction, said method comprising the
15   steps of:

        inputting said first tomographic images
and said second tomographic images;

        aligning resolutions of said first
tomographic images and said second tomographic
20   images by scaling one or both of said tomographic
images when the resolutions of said first
tomographic images and said second tomographic
images are different;

        generating a first projection image from
25   said first tomographic images and a second
projection image from said second tomographic
images;

        measuring shift amount between said first
projection image and said second projection image by
30   searching said second projection image for the same
area as a template by performing pattern matching
while shifting said template by an interval, said
template being generated from said first projection
image such that said template includes an area in
35   which a specific object image exists;

        correcting the slice position according to
said shift amount between said first projection

image and said second projection image; and

displaying said diagnostic image and said comparison image at a corrected slice position to a monitor.

5

3. The image alignment method as claimed
10 in claim 2, further comprising an adjusting step of adjusting positions of said diagnostic image and said comparison image which are displayed;

wherein a MIDI signal constructing method is used for the adjusting step, said MIDI signal
15 constructing method comprising the steps of:

providing n different MIDI channels or control numbers or combinations of them for a signal x which has $128 \times n$ stages in which n is a positive integer;

20 assuming said MIDI channels or said control numbers or said combinations as $p=1, 2, \cdots$ n;

dividing said signal x into 128 parts $W(1)(1 ; 0 \leqq 1 \leqq 127)$ in ascending order and assigning p
25 which is equal to $r+1$ $(r ; 0 \leqq r < n)$ to said signal x which is equal to $1 \times n + r$;

constructing and sending a MIDI control change message in which a control value is 1 by using a MIDI channel or control number corresponding
30 to p.

35 4. An image alignment method for extracting a comparison image corresponding to a diagnostic image and displaying the images, said

diagnostic image being a slice image which is one of
first tomographic images, said comparison image
being a slice image which is one of second
tomographic images which are taken at the time
5   different from the time when the first tomographic
images are taken, body section being a slice plane
in the X-Y axial direction and body axis being in
the Z axial direction, said method comprising the
steps of:
10   inputting said first tomographic images
and said second tomographic images;
             aligning resolutions of said first
tomographic images and said second tomographic
images by scaling one or both of said tomographic
15   images when the resolutions of said first
tomographic images and said second tomographic
images are different;
             finding a reference position in the Y
axial direction from each of said first tomographic
20   image and said second tomographic image and
correcting shift in the Y axial direction on the
basis of said reference position;
             generating a first projection image of the
X axial direction from said first tomographic images
25   and generating a second projection image of the X
axial direction from said second tomographic images;
             measuring shift amount between said first
projection image and said second projection image by
searching said second projection image for the same
30   area as a template by performing pattern matching
while shifting said template by an interval, said
template being generated from said first projection
image such that said template includes an area in
which a specific object image exists;
35   correcting the slice position according to
said shift amount between said first projection
image and said second projection image; and

displaying said diagnostic image and said comparison image at a corrected slice position to a monitor.

5

5. An image alignment method for extracting a comparison image corresponding to a
10 diagnostic image and displaying the images, said diagnostic image being a slice image which is one of first tomographic images, said comparison image being a slice image which is one of second tomographic images which are taken at the time
15 different from the time when the first tomographic images are taken, body section being a slice plane in the X-Y axial direction and body axis being in the Z axial direction, said method comprising the steps of:
20   inputting said first tomographic images and said second tomographic images;
        aligning resolutions of said first tomographic images and said second tomographic images by scaling one or both of said tomographic
25 images when the resolutions of said first tomographic images and said second tomographic images are different;
        generating a first projection image of the X axial direction from said first tomographic images
30 and generating a second projection image of the X axial direction from said second tomographic images;
        finding a reference position in the Y axial direction from each of said first projection image and said second projection image and
35 correcting shift in the Y axial direction on the basis of said reference position;
        measuring shift amount between said first

projection image and said second projection image by
searching said second projection image for the same
area as a template by performing pattern matching
while shifting said template by an interval, said
5   template being generated from said first projection
image such that said template includes an area in
which a specific object image exists;

correcting the slice position according to
said shift amount between said first projection
10 image and said second projection image; and

displaying said diagnostic image and said
comparison image at a corrected slice position to a
monitor.

15

6. A slice image automatic alignment
method for extracting a comparison image
20 corresponding to a diagnostic image, said diagnostic
image being a slice image which is one of first
tomographic images, said comparison image being a
slice image which is one of second tomographic
images which are taken at the time different from
25 the time when the first tomographic images are taken,
body section being a slice plane in the X-Y axial
direction and body axis being in the Z axial
direction, said method comprising the steps of:

inputting said first tomographic images
30 and said second tomographic images;

aligning resolutions of said first
tomographic images and said second tomographic
images by scaling one or both of said tomographic
images when the resolutions of said first
35 tomographic images and said second tomographic
images are different;

generating a first projection image from

said first tomographic images and a second
projection image from said second tomographic
images;

measuring shift amount between said first
5   projection image and said second projection image by
searching said second projection image for the same
area as a template by performing pattern matching
while shifting said template by an interval, said
template being generated from said first projection
10   image such that said template includes an area in
which a specific object image exists; and
correcting the slice position according to
said shift amount between said first projection
image and said second projection image.

15

7. The slice image automatic alignment
20   method as claimed in claim 6, the step of generating
projection images including the step of:
generating said projection image
comprising pixel values obtained by adding pixel
values of said tomographic images in the X or Y
25   axial direction or in any other direction.

30   8. The slice image automatic alignment
method as claimed in claim 6, the step of generating
projection images including the step of:
generating a two dimensional image
sequence comprising pixel values obtained by adding
35   pixel values of said tomographic images in the X or
Y axial direction or in any other direction; and
generating said projection image by

interpolating said two dimensional image sequence.

5

9. The slice image automatic alignment
method as claimed in claim 6, wherein said template
is an area of 25% to 50% from the top end of said
first projection image in the Z axial direction.

10

10. A slice image automatic alignment
15 method for extracting a comparison image
corresponding to a diagnostic image, said diagnostic
image being a slice image which is one of first
tomographic images, said comparison image being a
slice image which is one of second tomographic
20 images which are taken at the time different from
the time when the first tomographic images are taken,
body section being a slice plane in the X-Y axial
direction and body axis being in the Z axial
direction, said method comprising the steps of:
25   inputting said first tomographic images
and said second tomographic images;
          aligning resolutions of said first
tomographic images and said second tomographic
images by scaling one or both of said tomographic
30 images when the resolutions of said first
tomographic images and said second tomographic
images are different;
          finding a reference position in the Y
axial direction from each of said first tomographic
35 image and said second tomographic image and
correcting shift in the Y axial direction on the
basis of said reference position;

generating a first projection image of the
X axial direction from said first tomographic images
and generating a second projection image of the X
axial direction from said second tomographic images;

5   measuring shift amount between said first
projection image and said second projection image by
searching said second projection image for the same
area as a template by performing pattern matching
while shifting said template by an interval, said

10   template being generated from said first projection
image such that said template includes an area in
which a specific object image exists; and

correcting the slice position according to
said shift amount between said first projection

15   image and said second projection image.

20   11. A slice image automatic alignment
method for extracting a comparison image
corresponding to a diagnostic image, said diagnostic
image being a slice image which is one of first
tomographic images, said comparison image being a

25   slice image which is one of second tomographic
images which are taken at the time different from
the time when the first tomographic images are taken,
body section being a slice plane in the X-Y axial
direction and body axis being in the Z axial

30   direction, said method comprising the steps of:
inputting said first tomographic images
and said second tomographic images;
aligning resolutions of said first
tomographic images and said second tomographic

35   images by scaling one or both of said tomographic
images when the resolutions of said first
tomographic images and said second tomographic

images are different;

generating a first projection image of the X axial direction from said first tomographic images and generating a second projection image of the X axial direction from said second tomographic images;

5

finding a reference position in the Y axial direction from each of said first projection image and said second projection image and correcting shift in the Y axial direction on the basis of said reference position;

10

measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same area as a template by performing pattern matching while shifting said template by an interval, said template being generated from said first projection image such that said template includes an area in which a specific object image exists; and

15

correcting the slice position according to said shift amount between said first projection image and said second projection image.

20

25

12. The slice image automatic alignment method as claimed in claim 10, the step of generating projection images including the step of:

generating a two dimensional image sequence comprising pixel values obtained by adding pixel values of said tomographic images in the X axial direction; and

30

generating said projection image by interpolating said two dimensional image sequence.

35

13. The slice image automatic alignment method as claimed in claim 10, the step of finding said reference position and correcting shift

5   including the steps of:

extracting a bed area as said reference position from said first tomographic image and said second tomographic image or said first projection image and said second projection image;

10   correcting shift in the Y axial direction on the basis of the bed surface, said Y axial direction being perpendicular to said bed surface.

15

14. The slice image automatic alignment method as claimed in claim 10, the step of finding said reference position and correcting shift

20   including the steps of:

finding a body part which contacts the bed as said reference position from said first tomographic image and said second tomographic image or said first projection image and said second

25   projection image;

correcting shift in the Y axial direction on the basis of said part, said Y axial direction being perpendicular to said part.

30

15. The slice image automatic alignment method as claimed in claim 10, the step of finding

35   said reference position and correcting shift including the steps of:

finding a backbone part as said reference

position from said first tomographic image and said second tomographic image or said first projection image and said second projection image;

   correcting shift in the Y axial direction
5 on the basis of said backbone part, said Y axial direction being perpendicular to said backbone part.

10

   16. The slice image automatic alignment method as claimed in claim 6, the step of generating projection images including the step of generating said projection image in which weight is assigned to
15 a specific observation object by setting a window level and a window width.

20

   17. The slice image automatic alignment method as claimed in claim 10, the step of generating projection images including the step of generating said projection image in which weight is
25 assigned to a specific observation object by setting a window level and a window width.

30

   18. The slice image automatic alignment method as claimed in claim 6, the step of generating projection images including the step of generating said projection image in which only a part including
35 a distinctive part is projected.

19. The slice image automatic alignment method as claimed in claim 10, the step of generating projection images including the step of generating said projection image in which only a part including a distinctive part is projected.

20. The slice image automatic alignment method as claimed in claim 6, the step of measuring said shift amount including the steps of:

generating a plurality of templates;

performing template matching on said second projection image by said plurality of templates; and

measuring shift amount between said first projection image and said second projection image from a plurality of reference points.

21. The slice image automatic alignment method as claimed in claim 10, the step of measuring said shift amount including the steps of:

generating a plurality of templates;

performing template matching on said second projection image by said plurality of templates; and

measuring shift amount between said first projection image and said second projection image from a plurality of reference points.

22. The slice image automatic alignment
method as claimed in claim 10, wherein said template
is an area of 25% to 50% from the top end of said
first projection image in the Z axial direction.

23. The slice image automatic alignment
method as claimed in claim 11, wherein said template
is an area of 25% to 50% from the top end of said
first projection image in the Z axial direction.

24. A tomographic image reading apparatus
for extracting a comparison image corresponding to a
diagnostic image and displaying the images, said
diagnostic image being a slice image which is one of
first tomographic images, said comparison image
being a slice image which is one of second
tomographic images which are taken at the time
different from the time when the first tomographic
images are taken, body section being a slice plane
in the X-Y axial direction and body axis being in
the Z axial direction, said apparatus comprising:
        inputting means for inputting said first
tomographic images and said second tomographic
images;
        projection image generation means for
generating a first projection image from said first
tomographic images and a second projection image
from said second tomographic images;
        template generation means for generating a

template from said first projection image such that
said template includes an area in which a specific
object image exists;

    matching means for measuring shift amount
5 between said first projection image and said second
projection image by searching said second projection
image for the same area as said template;

    slice position correcting means for
correcting the slice position according to said
10 shift amount between said first projection image and
said second projection image; and

    displaying means for displaying said
diagnostic image and said comparison image at a
corrected slice position to a monitor.

15

    25. An image alignment apparatus for
20 extracting a comparison image corresponding to a
diagnostic image and displaying the images, said
diagnostic image being a slice image which is one of
first tomographic images, said comparison image
being a slice image which is one of second
25 tomographic images which are taken at the time
different from the time when the first tomographic
images are taken, body section being a slice plane
in the X-Y axial direction and body axis being in
the Z axial direction, said apparatus comprising:
30   inputting means for inputting said first
tomographic images and said second tomographic
images;

    resolution aligning means for aligning
resolutions of said first tomographic images and
35 said second tomographic images by scaling one or
both of said tomographic images when the resolutions
of said first tomographic images and said second

tomographic images are different;

projection image generation means for
generating a first projection image from said first
tomographic images and a second projection image

5   from said second tomographic images;

template generation means for generating a
template from said first projection image such that
said template includes an area in which a specific
object image exists;

10   matching means for measuring shift amount
between said first projection image and said second
projection image by searching said second projection
image for the same area as said template by
performing pattern matching while shifting said

15   template by an interval;

slice position correcting means for
correcting the slice position according to said
shift amount between said first projection image and
said second projection image; and

20   displaying means for displaying said
diagnostic image and said comparison image at a
corrected slice position to a monitor.

25

26. An image alignment apparatus for
extracting a comparison image corresponding to a
diagnostic image and displaying the images, said

30   diagnostic image being a slice image which is one of
first tomographic images, said comparison image
being a slice image which is one of second
tomographic images which are taken at the time
different from the time when the first tomographic

35   images are taken, body section being a slice plane
in the X-Y axial direction and body axis being in
the Z axial direction, said apparatus comprising:

inputting means for inputting said first
tomographic images and said second tomographic
images;

resolution aligning means for aligning
5   resolutions of said first tomographic images and
said second tomographic images by scaling one or
both of said tomographic images when the resolutions
of said first tomographic images and said second
tomographic images are different;
10 reference position recognition means for
finding a reference position in the Y axial
direction from each of said first tomographic image
and said second tomographic image
shift correcting means for correcting
15 shift in the Y axial direction on the basis of said
reference position;
projection image generation means for
generating a first projection image of the X axial
direction from said first tomographic images and
20 generating a second projection image of the X axial
direction from said second tomographic images;
template generation means for generating a
template from said first projection image such that
said template includes an area in which a specific
25 object image exists;
matching means for measuring shift amount
between said first projection image and said second
projection image by searching said second projection
image for the same area as said template by
30 performing pattern matching while shifting said
template by an interval;
slice position correcting means for
correcting the slice position according to said
shift amount between said first projection image and
35 said second projection image; and
displaying means for displaying said
diagnostic image and said comparison image at a

corrected slice position to a monitor.

5

27. An image alignment apparatus for extracting a comparison image corresponding to a diagnostic image and displaying the images, said diagnostic image being a slice image which is one of

10 first tomographic images, said comparison image being a slice image which is one of second tomographic images which are taken at the time different from the time when the first tomographic images are taken, body section being a slice plane

15 in the X-Y axial direction and body axis being in the Z axial direction, said apparatus comprising:

inputting means for inputting said first tomographic images and said second tomographic images;

20 resolution aligning means for aligning resolutions of said first tomographic images and said second tomographic images by scaling one or both of said tomographic images when the resolutions of said first tomographic images and said second

25 tomographic images are different;

projection image generation means for generating a first projection image of the X axial direction from said first tomographic images and generating a second projection image of the X axial

30 direction from said second tomographic images;

reference position recognition means for finding a reference position in the Y axial direction from each of said first projection image and said second projection image;

35 shift correcting means for correcting shift in the Y axial direction on the basis of said reference position;

template generation means for generating a
template from said first projection image such that
said template includes an area in which a specific
object image exists;

5   matching means for measuring shift amount
between said first projection image and said second
projection image by searching said second projection
image for the same area as said template by
performing pattern matching while shifting said
10   template by an interval;

slice position correcting means for
correcting the slice position according to said
shift amount between said first projection image and
said second projection image; and

15   displaying means for displaying said
diagnostic image and said comparison image at a
corrected slice position to a monitor.

20

28. A slice image automatic alignment
apparatus for extracting a comparison image
corresponding to a diagnostic image, said diagnostic
25   image being a slice image which is one of first
tomographic images, said comparison image being a
slice image which is one of second tomographic
images which are taken at the time different from
the time when the first tomographic images are taken,
30   body section being a slice plane in the X-Y axial
direction and body axis being in the Z axial
direction, said apparatus comprising:

inputting means for inputting said first
tomographic images and said second tomographic
35   images;

resolution aligning means for aligning
resolutions of said first tomographic images and

said second tomographic images by scaling one or both of said tomographic images when the resolutions of said first tomographic images and said second tomographic images are different;

5   projection image generation means for generating a first projection image from said first tomographic images and a second projection image from said second tomographic images;

template generation means for generating a
10   template. from said first projection image such that said template includes an area in which a specific object image exists;

matching means for measuring shift amount between said first projection image and said second
15   projection image by searching said second projection image for the same area as said template by performing pattern matching while shifting said template by an interval; and

slice position correcting means for
20   correcting the slice position according to said shift amount between said first projection image and said second projection image.

25

29. A slice image automatic alignment apparatus for extracting a comparison image corresponding to a diagnostic image, said diagnostic
30   image being a slice image which is one of first tomographic images, said comparison image being a slice image which is one of second tomographic images which are taken at the time different from the time when the first tomographic images are taken,
35   body section being a slice plane in the X-Y axial direction and body axis being in the Z axial direction, said apparatus comprising:

inputting means for inputting said first
tomographic images and said second tomographic
images;

resolution aligning means for aligning
5   resolutions of said first tomographic images and
said second tomographic images by scaling one or
both of said tomographic images when the resolutions
of said first tomographic images and said second
tomographic images are different;

10   reference position recognition means for
finding a reference position in the Y axial
direction from each of said first tomographic image
and said second tomographic image;

shift correcting means for correcting
15   shift in the Y axial direction on the basis of said
reference position;

projection image generation means for
generating a first projection image of the X axial
direction from said first tomographic images and
20   generating a second projection image of the X axial
direction from said second tomographic images;

template generation means for generating a
template from said first projection image such that
said template includes an area in which a specific
25   object image exists;

matching means for measuring shift amount
between said first projection image and said second
projection image by searching said second projection
image for the same area as said template by
30   performing pattern matching while shifting said
template by an interval; and

slice position correcting means for
correcting the slice position according to said
shift amount between said first projection image and
35   said second projection image.

30. A slice image automatic alignment
apparatus for extracting a comparison image
corresponding to a diagnostic image, said diagnostic
5 image being a slice image which is one of first
tomographic images, said comparison image being a
slice image which is one of second tomographic
images which are taken at the time different from
the time when the first tomographic images are taken,
10 body section being a slice plane in the X-Y axial
direction and body axis being in the Z axial
direction, said apparatus comprising:

inputting means for inputting said first
tomographic images and said second tomographic
15 images;

resolution aligning means for aligning
resolutions of said first tomographic images and
said second tomographic images by scaling one or
both of said tomographic images when the resolutions
20 of said first tomographic images and said second
tomographic images are different;

projection image generation means for
generating a first projection image of the X axial
direction from said first tomographic images and
25 generating a second projection image of the X axial
direction from said second tomographic images;

reference position recognition means for
finding a reference position in the Y axial
direction from each of said first projection image
30 and said second projection image;

shift correcting means for correcting
shift in the Y axial direction on the basis of said
reference position;

template generation means for generating a
35 template from said first projection image such that
said template includes an area in which a specific
object image exists;

matching means for measuring shift amount
between said first projection image and said second
projection image by searching said second projection
image for the same area as said template by
5   performing pattern matching while shifting said
template by an interval; and

slice position correcting means for
correcting the slice position according to said
shift amount between said first projection image and
10   said second projection image.

15   31. A computer readable medium storing
program code for causing a computer to extract a
comparison image corresponding to a diagnostic image
and to display the images, said diagnostic image
being a slice image which is one of first
20   tomographic images, said comparison image being a
slice image which is one of second tomographic
images which are taken at the time different from
the time when the first tomographic images are taken,
body section being a slice plane in the X-Y axial
25   direction and body axis being in the Z axial
direction, said computer readable medium comprising:

program code means for inputting said
first tomographic images and said second tomographic
images;
30   program code means for generating a first
projection image from said first tomographic images
and a second projection image from said second
tomographic images;

program code means for measuring shift
35   amount between said first projection image and said
second projection image by searching said second
projection image for the same area as a template,

said template being generated from said first
projection image such that said template includes an
area in which a specific object image exists;

     program code means for correcting the
5   slice position according to said shift amount
between said first projection image and said second
projection image; and

     program code means for displaying said
diagnostic image and said comparison image at a
10 corrected slice position to a monitor.

15   32. A computer readable medium storing
program code for causing a computer to extract a
comparison image corresponding to a diagnostic image
and to display the images, said diagnostic image
being a slice image which is one of first
20 tomographic images, said comparison image being a
slice image which is one of second tomographic
images which are taken at the time different from
the time when the first tomographic images are taken,
body section being a slice plane in the X-Y axial
25 direction and body axis being in the Z axial
direction, said computer readable medium comprising:

     program code means for inputting said
first tomographic images and said second tomographic
images;
30   program code means for aligning
resolutions of said first tomographic images and
said second tomographic images by scaling one or
both of said tomographic images when the resolutions
of said first tomographic images and said second
35 tomographic images are different;

     program code means for generating a first
projection image from said first tomographic images

and a second projection image from said second
tomographic images;

    program code means for measuring shift
amount between said first projection image and said
5   second projection image by searching said second
projection image for the same area as a template by
performing pattern matching while shifting said
template by an interval, said template being
generated from said first projection image such that
10   said template includes an area in which a specific
object image exists;

    program code means for correcting the
slice position according to said shift amount
between said first projection image and said second
15   projection image; and

    program code means for displaying said
diagnostic image and said comparison image at a
corrected slice position to a monitor.

20

    33. The computer readable medium as
claimed in claim 32, further comprising adjusting
25   program code means for adjusting positions of said
diagnostic image and said comparison image which are
displayed;

    wherein a MIDI signal constructing program
code means is used for adjusting program code means,
30   said MIDI signal constructing program code means:

    program code means for providing n
different MIDI channels or control numbers or
combinations of them for a signal x which has $128 \times n$
stages in which n is a positive integer;

35   program code means for assuming said MIDI
channels or said control numbers or said
combinations as $p = 1, 2, \cdots n$;

program code means for dividing said
signal x into 128 parts W(l)(1 ; $0 \leqq l \leqq 127$) in
ascending order and assigning p which is equal to
r+1 (r ; $0 \leqq r < n$) to said signal x which is equal to l

5 $\times n + r$;

program code means for constructing and
sending a MIDI control change message in which a
control value is 1 by using a MIDI channel or
control number corresponding to p.

10

34. A computer readable medium storing

15 program code for causing a computer to extract a
comparison image corresponding to a diagnostic image,
said diagnostic image being a slice image which is
one of first tomographic images, said comparison
image being a slice image which is one of second

20 tomographic images which are taken at the time
different from the time when the first tomographic
images are taken, body section being a slice plane
in the X-Y axial direction and body axis being in
the Z axial direction, said computer readable medium

25 comprising:

program code means for inputting said
first tomographic images and said second tomographic
images;

program code means for aligning

30 resolutions of said first tomographic images and
said second tomographic images by scaling one or
both of said tomographic images when the resolutions
of said first tomographic images and said second
tomographic images are different;

35 program code means for generating a first
projection image from said first tomographic images
and a second projection image from said second

tomographic images;

program code means for measuring shift
amount between said first projection image and said
second projection image by searching said second
5   projection image for the same area as a template by
performing pattern matching while shifting said
template by an interval, said template being
generated from said first projection image such that
said template includes an area in which a specific
10   object image exists; and

program code means for correcting the
slice position according to said shift amount
between said first projection image and said second
projection image.

15

35. The computer readable medium as
20   claimed in claim 34, said program code means for
generating said projection images comprising:

program code means for generating said
projection image comprising pixel values obtained by
adding pixel values of said tomographic images in
25   the X or Y axial direction or in any other direction.

30   36. The computer readable medium as
claimed in claim 34, said program code means for
generating said projection images comprising:

program code means for generating a two
dimensional image sequence comprising pixel values
35   obtained by adding pixel values of said tomographic
images in the X or Y axial direction or in any other
direction; and

generating said projection image by interpolating said two dimensional image sequence.

5

37. The computer readable medium as claimed in claim 34, wherein said template is an area of 25% to 50% from the top end of said first
10 projection image in the Z axial direction.

15 38. A computer readable medium storing program code for causing a computer to extract a comparison image corresponding to a diagnostic image, said diagnostic image being a slice image which is one of first tomographic images, said comparison
20 image being a slice image which is one of second tomographic images which are taken at the time different from the time when the first tomographic images are taken, body section being a slice plane in the X-Y axial direction and body axis being in
25 the Z axial direction, said computer readable medium comprising:
        program code means for inputting said first tomographic images and said second tomographic images;
30   program code means for aligning resolutions of said first tomographic images and said second tomographic images by scaling one or both of said tomographic images when the resolutions of said first tomographic images and said second
35 tomographic images are different;
        program code means for finding a reference position in the Y axial direction from each of said

first tomographic image and said second tomographic image and correcting shift in the Y axial direction on the basis of said reference position;

     program code means for generating a first
5 projection image of the X axial direction from said first tomographic images and generating a second projection image of the X axial direction from said second tomographic images;

     program code means for measuring shift
10 amount between said first projection image and said second projection image by searching said second projection image for the same area as a template by performing pattern matching while shifting said template by an interval, said template being
15 generated from said first projection image such that said template includes an area in which a specific object image exists; and

     program code means for correcting the slice position according to said shift amount
20 between said first projection image and said second projection image.

25

     39. A computer readable medium storing program code for causing a computer to extract a comparison image corresponding to a diagnostic image, said diagnostic image being a slice image which is
30 one of first tomographic images, said comparison image being a slice image which is one of second tomographic images which are taken at the time different from the time when the first tomographic images are taken, body section being a slice plane
35 in the X-Y axial direction and body axis being in the Z axial direction, said computer readable medium comprising:

program code means for inputting said first tomographic images and said second tomographic images;

program code means for aligning

5   resolutions of said first tomographic images and said second tomographic images by scaling one or both of said tomographic images when the resolutions of said first tomographic images and said second tomographic images are different;

10   program code means for generating a first projection image of the X axial direction from said first tomographic images and generating a second projection image of the X axial direction from said second tomographic images;

15   program code means for finding a reference position in the Y axial direction from each of said first projection image and said second projection image and correcting shift in the Y axial direction on the basis of said reference position;

20   program code means for measuring shift amount between said first projection image and said second projection image by searching said second projection image for the same area as a template by performing pattern matching while shifting said

25   template by an interval, said template being generated from said first projection image such that said template includes an area in which a specific object image exists; and

program code means for correcting the

30   slice position according to said shift amount between said first projection image and said second projection image.

35

40. The computer readable medium as

claimed in claim 38, said program code means for
generating said projection images comprising:

     program code means for generating a two
dimensional image sequence comprising pixel values

5 obtained by adding pixel values of said tomographic
images in the X axial direction; and

     program code means for generating said
projection image by interpolating said two
dimensional image sequence.

10

     41. The computer readable medium as

15 claimed in claim 38, said program code means for
finding said reference position and correcting shift
comprising:

     program code means for extracting a bed
area as said reference position from said first

20 tomographic image and said second tomographic image
or said first projection image and said second
projection image;

     program code means for correcting shift in
the Y axial direction on the basis of the bed

25 surface, said Y axial direction being perpendicular
to said bed surface.

30

     42. The computer readable medium as
claimed in claim 38, said program code means for
finding said reference position and correcting shift
comprising:

35 program code means for finding a body part
which contacts the bed as said reference position
from said first tomographic image and said second

tomographic image or said first projection image and said second projection image;

program code means for correcting shift in the Y axial direction on the basis of said part,

5   said Y axial direction being perpendicular to said part.

10

43. The computer readable medium as claimed in claim 38, said program code means for finding said reference position and correcting shift comprising:

15   program code means for finding a backbone part as said reference position from said first tomographic image and said second tomographic image or said first projection image and said second projection image;

20   program code means for correcting shift in the Y axial direction on the basis of said backbone part, said Y axial direction being perpendicular to said backbone part.

25

44. The computer readable medium as claimed in claim 34, said program code means for

30   generating said projection images comprising program code means for generating said projection image in which weight is assigned to a specific observation object by setting a window level and a window width.

35

45. The computer readable medium as claimed in claim 38, said program code means for generating said projection images comprising program code means for generating said projection image in

5   which weight is assigned to a specific observation object by setting a window level and a window width.

10

46. The computer readable medium as claimed in claim 34, said program code means for generating said projection images comprising program code means for generating said projection image in

15 which only a part including a distinctive part is projected.

20

47. The computer readable medium as claimed in claim 38, said program code means for generating said projection images comprising program code means for generating said projection image in

25 which only a part including a distinctive part is projected.

30

48. The computer readable medium as claimed in claim 34, said program code means for

35 measuring said shift amount comprising:
        program code means for generating a plurality of templates;

program code means for performing template matching on said second projection image by said plurality of templates; and

program code means for measuring shift

5 amount between said first projection image and said second projection image from a plurality of reference point.

10

49. The computer readable medium as claimed in claim 38, said program code means for measuring said shift amount comprising:

15 program code means for generating a plurality of templates;

program code means for performing template matching on said second projection image by said plurality of templates; and

20 program code means for measuring shift amount between said first projection image and said second projection image from a plurality of reference point.

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